CLAIMS

1. A support comprising functional groups supported therein that specifically react with an aldehyde group of a sugar chain.

2. The support according to claim 1, wherein the functional group is at least one selected from an oxylamino group, a hydrazide group and a semithiocarbazide group.

3. The support according claim 2, wherein the functional group is an oxylamino group.

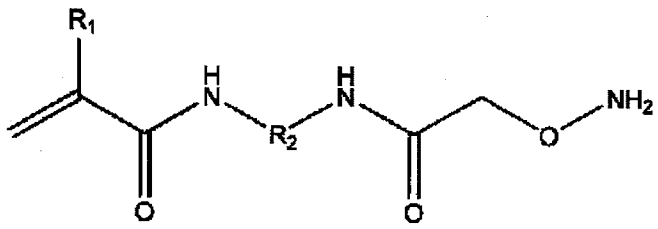
4. A polymer particle that is composed of the support according to any one of claims 1 to 3 and used as a carrier for trapping sugar chains.

5. The polymer particle according to claim 4, wherein the polymer particle is composed of a polymer obtained by polymerizing monomers having the functional group or derivatives of the monomers.

6. The polymer particle according to claim 5, wherein the monomers having the functional group include a monomer represented by the following general formula (1) or a derivative of the monomer:

[Formula 7]

(1)



(wherein R_1 represents H or CH_3 and R_2 represents an arbitrary molecular chain and optionally contains heteroatom(s)).

7. The polymer particle according to claim 5 or claim 6, wherein the polymer is a copolymer of a monomer having the functional group or a derivative thereof and a monomer or monomers that do not react with an aldehyde group of a sugar chain.

8. The polymer particle according to claim 7, wherein the monomers that do not react with an aldehyde group of a sugar chain include a multifunctional monomer as a crosslinking agent.

9. The polymer particle according to any one of claims 5 to 8, wherein the polymer is obtained by suspension polymerization method.

10. The polymer particle according to any one of claims 5 to 8, wherein the polymer is obtained by emulsion polymerization method.

11. The polymer particle according to any one of claims 4 to 10, wherein the particle shape is spherical.

12. The polymer particle according to claim 11, wherein the average

particle size is 0.05 to 200 μm.

13. A method for purifying sugar chains comprising steps of:

trapping sugar chains by using the polymer particle according to any of claims 4 to 12; and

separating the sugar chains.

14. A glycochip comprising the support according to any one of claims 1 to 3, wherein the support constitutes at least part of the substrate and sugar chains are immobilized on the substrate through bonding of at least part of the functional groups of the support to the sugar chains.

15. The glycochip according to claim 14, wherein the functional group is introduced onto the substrate through formation of the support having the functional group on the surface of the substrate by coating the substrate surface with a substance having the functional group.

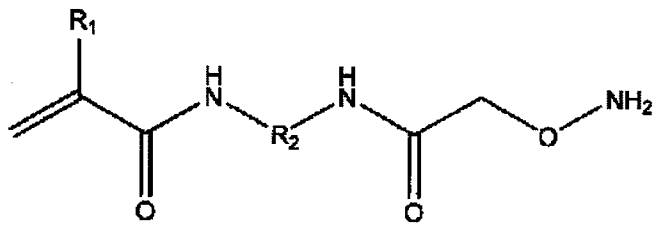
16. The glycochip according to claim 15, wherein the coating of the substrate surface with the substance having the functional group is formation of a molecular membrane on the substrate surface by the Langmuir-Blodgett method.

17. The glycochip according to claim 15 or claim 16, wherein the substance having the functional group is a polymer.

18. The glycochip according to claim 17, wherein the polymer contains a monomer unit represented by the following general formula (1):

[Formula 8]

(1)



(wherein R_1 represents H or CH_3 and R_2 represents an arbitrary molecular chain and optionally contains heteroatom(s)).

19. The glycochip according to claim 14, wherein the introduction of the functional group onto the substrate is performed via a different functional group that was introduced onto the substrate in advance.

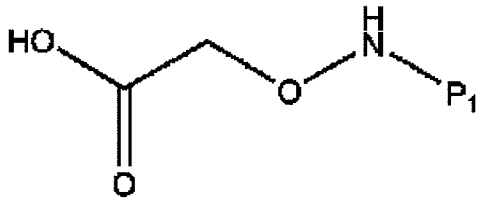
20. The glycochip according to claim 19, wherein the introduction of the functional group onto the substrate is performed by reaction of a first functional group that was introduced onto the substrate in advance and a substance having both a functional group that can react with the first functional group and an oxylamino group.

21. The glycochip according to claim 20, wherein the introduction of the functional group onto the substrate is performed by reaction of an amino group that was introduced onto the substrate in advance and a substance having both an oxylamino group and a carboxyl group.

22. The glycochip according to claim 20, wherein the substance having both an oxylamino group and a carboxyl group is represented by the following formula (2):

[Formula 9]

(2)



(wherein, P_1 represents an optional protecting group).

23. The glycochip according to any one of claims 14 to 22, wherein the substrate is made of plastics.

24. The glycochip according to any one of claims 14 to 23, wherein the aldehyde group of the sugar chain that bonds to the functional group is originated from the reducing terminal.

25. The glycochip according to any one of claims 14 to 23, wherein the aldehyde group of the sugar chain that bonds to the functional group was introduced by periodate oxidation or by a given enzymatic treatment of the sugar chain.

26. The glycochip according to claim 25, wherein the enzymatic treatment is a treatment with galactose oxidase.

27. A method of using a glycochip, wherein a sample solution is developed on the glycochip according to any one of claims 14 to 26, and interactions between a substance contained in the sample solution and the sugar chains immobilized on the substrate are quantified.

28. The method of using the glycochip according to claim 27, wherein the substance contained in the sample solution is at least one selected from blood, serum, homogenates or extracts of tissue, homogenates or extracts of cells, proteins, nucleic acids, enzymes, lectins, peptides, peptide nucleic acids, antibodies, sugar chains, glycoproteins, glycolipids and derivatives thereof.

29. The method of using the glycochip according to claim 27 or claim 28, wherein the quantification of interactions is based on detection of fluorescent light signals.

30. A method of using a glycochip, wherein cells are seeded on the glycochip according to any one of claims 14 to 26, and at least one behavior selected from differentiation, proliferation, adhesion and mutation of the cells is controlled by making use of the interactions between the sugar chains and cells.